

Remarks/Arguments:

The Examiner is respectfully requested to reconsider the additional restriction requirement imposed in the most recent Office Action, wherein Claims 25-34 and 42-44 are identified as Group I subject to reexamination, and Claims 35-41 are identified as Group II which have been indicated to be withdrawn as being directed to a separate and distinct invention from the invention of Group I (and, accordingly, not subject to reexamination) and to withdraw that requirement in view of the following comments.

The withdrawn Claims 35-41 include limitations comparable to limitations contained in the reexamined Claims 25-34 and 42-44 and would involve substantially the same prior art search and prior art as that for Claims 35-41 and, accordingly, are (and should have been) appropriately examinable with Claims 25-34 and 42-44.

The Examiner's attention is directed to a direct comparison of the basic independent Claim 25 of examined Group I with the basic independent Claim 35 of withdrawn Group II which follows. The preamble of independent Claim 25 recites a magnetic information storage medium operable to be non-erasable when exposed to a magnetic field, whereas the preamble of independent Claim 35 recites a specific type of information storage medium (i.e. a debit card) which is non-erasable when exposed to a magnetic medium. The body of both claims then identically recite "a substrate; a bilayer adjacent to said substrate including superimposed layers of magnetic material and nonmagnetic material; said bilayer including discrete information storage portions transcending said layer of magnetic material and said layer of nonmagnetic material formed by an intermixing of said magnetic material and said nonmagnetic material and having significantly lower permeability than the permeability of said magnetic material as an imbedded representation of information". Although the preamble of Claim 35 does not particularly recite that the debit card is a magnetic storage medium, the identical language in the body of both claims inherently provides the support that the debit card is, in fact, a magnetic storage medium. Although Claim 25 is silent on the meaning of the information that is stored on the information storage medium, it is inherent that such stored information does, in fact, have representational meaning. Claim 35 provides a specific representational meaning of the stored information on the debit card by including a final statement "wherein a remainder of higher permeability bilayer represents information on remaining debit opportunity". As demonstrated above, independent Claims 25 and 35 are so similar in content and are so closely interrelated, that they would involve substantially the same prior art search and prior art considerations. Accordingly the Examiner is requested to withdraw the restriction requirement imposed in the most recent office action, and to allow the claims of Group I and Group II to be rejoined for examination purposes, and to withdraw the finality of the most recent office action and undertake a reexamination of Claims 35-41.

The Examiner has rejected Claim 25 under 35 USC 112 suggesting that applicant's use of the term "significantly" is indefinite as used in the phrase "significantly lower permeability". Applicant traverses this rejection based upon applicant's specification which cites in numerous places a distinction between "high" permeability regions and the

"low" permeability regions achieved by the intermixing of portions of the bilayer materials due to the application of the laser thereto (see, for example, paragraph [0034] lines 9-12). In addition, paragraph [0037] lines 11-14 refers to "low" and "high" permeability and further states that the use copper and nickel as the two materials of the bilayer which are intermixed by the application of the laser pulse will achieve a "much lower permeability". Thus, it is clear from applicant's specification, that the change in the permeability of the intermixed portion is not minor but is "significant" as set forth in Claim 25. Typical ferromagnetic materials have magnetic permeabilities that are orders of magnitude larger than the permeability of nonmagnetic material. The permeability of the intermixed portion is effectively destroyed by the laser induced intermixing, resulting in a "low" permeability having a value at or close to zero. Accordingly, the Examiner is requested to reconsider and withdraw this rejection under 35 USC 112.

Claim 25 patentably defines over the prior art of record in reciting a magnetic information storage medium operable to be non-erasable when exposed to a magnetic field including a bilayer including discrete information storage portions which transcend a layer of magnetic material and a layer of nonmagnetic material, wherein the discrete information storage portions are formed by an intermixing of the magnetic material and the nonmagnetic material and have significantly lower permeability than the permeability of the magnetic material.

The Examiner has rejected Claims 25-34 and 42-44 primarily on the Baglin patent, which discloses an information storage medium including a bilayer adjacent to a substrate which is modified by ion irradiation to change high magnetic anisotropy material to material having no crystalline anisotropy. Although Baglin appears to have superficial similarities to applicant's invention set forth in Claim 25, there are significant differences, which will be elaborated upon below.

There are two basic types of ferromagnets, soft and hard ferromagnets. Hard magnets have a residual magnetization and are hysteretic. Soft magnets do not have a residual magnetization and are not hysteretic. Soft magnets are characterized by their magnetic permeability, which is the ease with which they can be magnetized, and their saturation magnetization. Both of these quantities are intrinsic and are not modified by the application of a magnetic field.

In ordinary magnetic storage media, the information is stored in local regions where the magnetization has a specific direction in, at least somewhat hard, magnetic material. The information is read by detecting the direction of the magnetization in that region. If a large magnetic field is applied, the magnetization of all the regions will be aligned in the direction of the field and the stored information has been erased. In contrast, in applicant's technology the information is not stored in the direction of the magnetization, but in the magnetic permeability. The magnetic permeability is a measure of how easily a material can be magnetized. Materials with high magnetic permeability attract magnetic field lines. It is this property that is used in applicant's non-erasable magnetic memory technology as set forth in Claim 25. What makes it non-erasable is that the magnetic permeability of a soft magnetic material is an intrinsic property that is

unaffected by a magnetic field. In applicant's Claim 25 information is stored in regions with either high or low magnetic permeability. It will not be affected by the application of a magnetic field and, in that sense, it is non-erasable. Accordingly, the Examiner's position that the "non-erasable" feature stated in the preamble is to be afforded no weight is not tenable and should be withdrawn.

Baglin's information storage medium fails to anticipate Claim 25 in several respects. Applicant's material does not lose the information stored in it when the material is exposed to a magnetic field. The information stored in Baglin's material, like similar conventional magnetic recording media, will be lost if it is exposed to a large magnetic field. In addition, in Baglin's process, disorder is created by ion irradiation. Baglin's irradiation changes high magnetic anisotropy material to material having no crystalline anisotropy. His irradiation increases the magnetic permeability. Applicant's intermixing in Claim 25 changes a material with little crystalline anisotropy to a material that is non-magnetic, i.e. it has no magnetic permeability. The intermixing of Claim 25 destroys the magnetic permeability of the intermixed portion, which portion is referred to in Claim 25 as "having significantly lower permeability". In summary, Baglin converts a hard hysteretic material into a soft or highly permeable material. In contrast, Claim 25 undertakes a mixing of the bilayer which converts a permeable material into something non-magnetic (having little or no magnetic permeability). Accordingly, Baglin is deficient in anticipating Claim 25.

The remaining prior art references relied upon by the Examiner in the rejection of some of the claims have been noted but these references fail to overcome the above-discussed deficiencies of Baglin.

Claims 26-34 and 42-44 depend from Claim 25 and are patentable for the reasons given in support of the patentability of Claim 25 as well as for the additional limitations contained therein.

The arguments posed in support of the patentability of Claim 25 over Baglin are likewise applicable to withdrawn Group II Claim 35 and Claims 36-41 which depend therefrom.

For the above reasons, Claims 25-34 and 42-44, and Group II Claims 35-41 as well, are believed allowable over the prior art of record and an early notice to such effect is solicited. Since this response is being filed on the last day of the six month statutory period for response to the Office action, an appeal to the Board Of Patent Appeals And Interferences is being filed concurrently with this Response to preserve applicant's rights under the subject application.

November 8, 2007

Edward L Stolarun

EDWARD L. STOLARUN
Attorney of Record
Reg. No. 25,515
US Army Research Laboratory
Telephone (703) 806-8244